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8. (Amended) The imaging system of claim 7 wherein the summer [comprises an analog-to-digital converter] is digital.
10. (Amended) An imaging system comprising:
a first group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;
a second group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals; and
a summer responsive to [the] two or more of the corresponding pixel image signals for outputting an aggregate image signal[;
a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the amplified aggregate image signal].
11. (Amended) The imaging system of claim 10 wherein the summer [comprises an analog-to-digital converter] is digital.
14. (Amended) The imaging system of claim 13 wherein the summer comprises [an analog-to-digital converter] a digital summer.
17. (Amended) The imaging system of claim 16 wherein the summer comprises [an analog-to-digital converter] a digital summer.
20. (Amended) The imaging system of claim 19 wherein the summer comprises [an analog-to-digital converter] a digital summer.
28. (New) The imaging system of claim 7, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.

29. (New) The imaging system of claim 7, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
30. (New) The imaging system of claim 10, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
31. (New) The imaging system of claim 10, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
32. (New) The imaging system of claim 13, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
33. (New) The imaging system of claim 13, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
34. (New) The imaging system of claim 16, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
35. (New) The imaging system of claim 16, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
36. (New) The imaging system of claim 19, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
37. (New) The imaging system of claim 19, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.

38. (New) The imaging system of claim 10, wherein the summer is responsive to two or more of the corresponding pixel images signals from the first group pixel, and wherein the system further comprises:

another summer responsive to two or more of the corresponding pixel image signals from the second group pixel for outputting a first aggregate image signal;

a first variable-gain amplifier responsive to the aggregate image signal from the summer for outputting a first amplified aggregate image signal based on a first adjustable amplifier gain;

a first automatic gain controller for adjusting the first variable-gain amplifier gain based on the first amplified aggregate image signal;

a second variable-gain amplifier responsive to the aggregate image signal from the summer for outputting a second amplified aggregate image signal based on a second adjustable amplifier gain; and

a second automatic gain controller for outputting the first variable-gain amplifier gain based on the second amplified aggregate image signal.

CLEAN VERSION OF PENDING CLAIMS

REDUNDANT IMAGING METHODS AND SYSTEMS

Applicant: David J. McElroy et al.
Serial No.: 09/650,551

Claims 7-21 and 28-38, as of June 4, 2002 (Date of First Office Action).

- A1
7. (Amended) An imaging system comprising:
a first group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;
a second group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;
a summer responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the aggregate image signal.
- and C1
8. (Amended) The imaging system of claim 7 wherein the summer is digital.
9. The imaging system of claim 7 wherein the variable-gain amplifier is a digital amplifier.
- PQ
10. (Amended) An imaging system comprising:
a first group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;
a second group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals; and
a summer responsive to two or more of the corresponding pixel image signals for

- A2 C1/C10
- outputting an aggregate image signal.
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11. (Amended) The imaging system of claim 10 wherein the summer is digital.
12. The imaging system of claim 10 wherein the variable-gain amplifier is a digital amplifier.
13. An imaging system comprising:
two or more group pixels comprising two or more photodetector circuits for providing
two or more corresponding pixel image signals, with each photodetector circuit
having a surface area less than 50 square microns and comprising:
a source-follower transistor having a gate, source, and drain;
a ground node; and
a photodiode coupled between the gate of the source-follower transistor and the
ground node;
a summer responsive to two or more of the corresponding pixel image signals for
outputting an aggregate image signal;
a variable-gain amplifier responsive to the aggregate image signal for outputting an
amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the
aggregate image signal.
- A3 Q, C
14. (Amended) The imaging system of claim 13 wherein the summer comprises a digital
summer.
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15. The imaging system of claim 13 wherein the variable-gain amplifier is a digital amplifier.

16. An imaging system comprising:
- two or more group pixels comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a surface area less than 50 square microns and comprising:
- a source-follower transistor have a gate, source, and drain;
- a ground node; and
- a photodiode coupled between the gate of the source-follower transistor and the ground node;
- a summer responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
- a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
- an automatic gain controller for adjusting the adjustable amplifier gain based on the amplified aggregate image signal.

17. (Amended) } The imaging system of claim 16 wherein the summer comprises a digital summer.

18. The imaging system of claim 16 wherein the variable-gain amplifier is a digital amplifier.

19. An imaging system comprising:
- two or more group pixels comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a surface area less than 50 square microns and comprising:
- a source-follower transistor have a gate, source, and drain;
- a ground node; and
- a photodiode coupled between the gate of the source-follower transistor and the

ground node;
a summer having an output responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier having an input, an output, and a gain-control terminal, with the input operatively coupled to the output of the summer;
an automatic gain controller having an input coupled to the output of the variable-gain amplifier and having an output operatively coupled to the gain-control terminal of the variable-gain amplifier.

AS 20. (Amended) The imaging system of claim 19 wherein the summer comprises a digital summer.

and 21. The imaging system of claim 19 wherein the variable-gain amplifier is a digital amplifier.

AB 28. (New) The imaging system of claim 7, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.

29. (New) The imaging system of claim 7, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.

30. (New) The imaging system of claim 10, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.

31. (New) The imaging system of claim 10, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.

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cont.
32. (New) The imaging system of claim 13, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
- Snail*
CJ
33. (New) The imaging system of claim 13, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
- C*
34. (New) The imaging system of claim 16, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
35. (New) The imaging system of claim 16, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
- Snail*
CJ
36. (New) The imaging system of claim 19, wherein each photodetector in the first group pixel is tuned to detect substantially the same color light.
37. (New) The imaging system of claim 19, further comprising an address line and a signal line, with each photodetector coupled to the address line and the signal line.
- Snail*
CJ
38. (New) The imaging system of claim 10, wherein the summer is responsive to two or more of the corresponding pixel images signals from the first group pixel, and wherein the system further comprises:
- another summer responsive to two or more of the corresponding pixel image signals from the second group pixel for outputting a first aggregate image signal;
- a first variable-gain amplifier responsive to the aggregate image signal from the summer for outputting a first amplified aggregate image signal based on a first adjustable amplifier gain;
- a first automatic gain controller for adjusting the first variable-gain amplifier gain based

on the first amplified aggregate image signal;
a second variable-gain amplifier responsive to the aggregate image signal from the summer for outputting a second amplified aggregate image signal based on a second adjustable amplifier gain; and
a second automatic gain controller for outputting the first variable-gain amplifier gain based on the second amplified aggregate image signal.

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